Amendments to the Claims

This listing of claims replaces all prior versions and listings of claims in the application.

Listing of Claims

1. – 6. (cancelled)

7. (currently amended) [[A]] An isolated nucleic acid molecule comprising a nucleic acid sequence encoding ~~the recombinant chimeric envelope protein of claim 1~~ a chimeric retrovirus envelope protein comprising an ecotropic envelope protein and a heterologous short peptide ligand inserted within the ecotropic envelope protein, wherein the heterologous short peptide ligand is flanked by at least one cysteine on each side, optionally with one or more intervening amino acids between an end of the heterologous short peptide ligand and the cysteine.

8. (currently amended) A vector comprising a nucleic acid sequence encoding a chimeric envelope protein that contains a heterologous short peptide ligand, wherein the heterologous short peptide ligand is flanked by at least one cysteine on each side, optionally with one or more intervening amino acids between an end of the heterologous short peptide ligand and the cysteine.

9. (original) The vector of claim 8, wherein the vector further comprises a nucleic acid sequence that encodes a therapeutically useful polypeptide.

10. (currently amended) A recombinant retroviral particle comprising the nucleic acid of claim 7 ~~a chimeric envelope protein comprising a heterologous short peptide ligand~~.

11. (original) The recombinant retroviral particle of claim 10, wherein the retroviral particle can infect a mouse cell.

12. (original) The recombinant retroviral particle of claim 10, wherein the retroviral particle cannot infect a mouse cell.

13. (currently amended) A method of altering retroviral tropism, the method comprising

[[(a)]] introducing into the genome of a retrovirus [[a]] the nucleic acid sequence ~~that encodes a chimeric envelope protein~~ of claim 7, ~~and wherein~~

~~(b) the nucleic acid sequence of the chimeric envelope protein comprises a heterologous short peptide ligand,~~ thereby producing a pseudovirus having altered tropism.

14. (original) The method of claim 13, wherein murine leukemia virus (MLV) retroviral tropism is altered.

15. (original) The method of claim 13, wherein the pseudovirus does not express wild-type envelope protein.

16. (original) The method of claim 14, wherein the heterologous short peptide ligand is inserted into a conserved region of a wild-type envelope protein.

17. - 23. (cancelled)

24. (currently amended) A method of delivering a selected nucleic acid sequence to a cell, the method comprising,

(a) providing a cell; and

(b) infecting a cell with a virus comprising (i) said selected nucleic acid and (ii) the nucleic acid of claim 7~~a chimeric envelope protein and the nucleic acid sequence, wherein the chimeric envelope protein comprises a heterologous short peptide ligand~~.

25. (cancelled)

26. (original) The method of claim 24, wherein the cell is a mammalian cell.

27. (original) The method of claim 24, wherein the cell is a human cell.

28. (original) The method of claim 24, wherein the cell is a cancer cell.

29. (original) The method of claim 24, wherein the cell is in an animal.

30. (currently amended) A method of treating cancer, the method comprising

(a) providing a cancer cell; and

(b) infecting a cancer cell with a virus, the virus comprising ~~a chimeric envelope protein comprising a heterologous short peptide ligand~~ the nucleic acid of claim 7 and a therapeutically useful gene.

31. (original) The method of claim 30, wherein the virus is a retrovirus.

32. (original) The method of claim 30, wherein the cancer is in a mammal.

33. (original) The method of claim 30, wherein the cancer is in a human.

34. (original) The method of claim 30, wherein the therapeutically useful gene is encodes thymidine kinase.

35. (new) The nucleic acid of claim 7, wherein the ecotropic envelope protein is a Murine Leukemia Virus (MLV) envelope protein.

36. (new) The nucleic acid of claim 7, wherein the ecotropic envelope protein is a wild type envelope protein.

37. (new) The nucleic acid of claim 7, wherein the heterologous short peptide ligand is selected from the group consisting of an RGD ligand, a human epidermal growth factor receptor (HRG) ligand, or a gastrin releasing protein (GRP) ligand.

38. (new) The nucleic acid of claim 7, wherein the heterologous short peptide ligand is inserted into a conserved region of a wild-type envelope protein.

39. (new) The vector of claim 8, wherein the vector is a retrovirus.